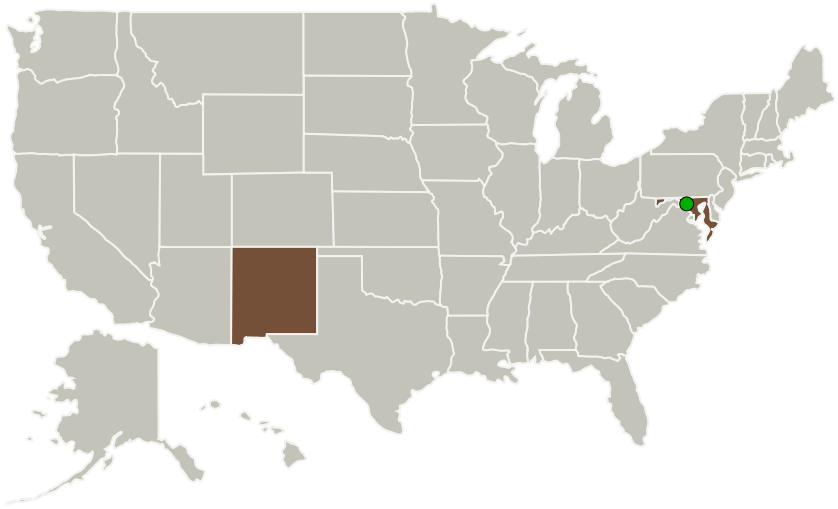
Robust optical carbon dioxide isotope analyzer, Phase I

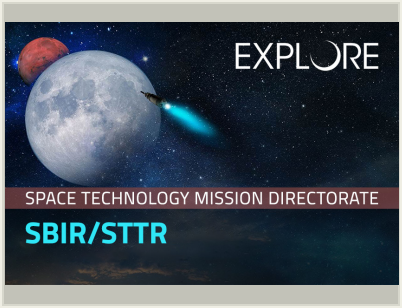
Completed Technology Project (2012 - 2012)

Project Introduction

Isotopic analysis of carbon dioxide is an important tool for characterization of the exchange and transformation of carbon between the biosphere and the atmosphere. These measurements require highly accurate and precise instruments that are capable of providing isotopic abundances to discriminate between man-made and natural carbon sources. Laser-based isotopic measurements offer the Earth Science research community an opportunity to gather critical information on the generation and fate of carbon dioxide. Improvements to existing technology are needed for carbon isotope measurements to be made with minimal labor, for long periods, in remote areas and harsh conditions. The proposed Phase I project extends the application of well established near infrared laser and detector technology that is proven in trace gas field measurements towards the development of an automated isotopic carbon dioxide sensor that can be deployed in balloon-based systems, remotely operated robotic aircraft, or in harsh conditions such as volcanic fumaroles.

Primary U.S. Work Locations and Key Partners





Robust optical carbon dioxide isotope analyzer, Phase I

Table of Contents

Robust optical carbon dioxide isotope analyzer, Phase I

Completed Technology Project (2012 - 2012)

Organizations Performing Work	Role	Type	Location
Southwest Sciences, Inc.	Lead Organization	Industry	Santa Fe, New Mexico
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	New Mexico

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138469)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Southwest Sciences, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Steven M Massick

Co-Investigator:

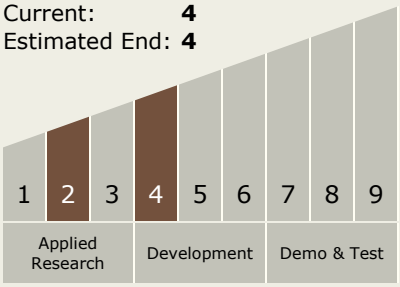
Steve Massick

Robust optical carbon dioxide isotope analyzer, Phase I

Completed Technology Project (2012 - 2012)

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.1 Atmosphere Revitalization

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System